been enabled to determine by this means some cases of supposed amaurosis to be in fact cataract, and has treated them successfully by operation.

Dr. Mackenzie, an eminent ophthalmologist of Glasgow, has also employed this means to determine the condition of the eye in glaucoma. Dr. Hays remarked that he had resorted to the catoptric examination of the eye in many cases, and believed that it would prove as valuable a means of diagnosis in some of the diseases of the eye, as auscultation is in those of the chest.

Dr. Hays exhibited and explained several models, designed and constructed by Dr. John Neill, resident surgeon at Wills' Hospital, for the purpose of illustrating the catoptric phenomena just explained.

Dr. Patterson communicated verbally a method of using thin sheets of lead by the blind, in writing, reading, and musical notation, invented by Mr. Joseph Saxton. The sheets of lead are three thousandths of an inch in thickness. Dr. Patterson presented specimens of the writing and musical notation.

Dr. Bache communicated the decease of Mr. George Pollok, a member of the Society, who died in April last.

Stated Meeting, May 17.

Present, twenty members.

Mr. Du Ponceau, President, in the Chair.

Letters were received from Mr. Thomas Townsend, and Mr. G. Riboni, and referred to committees.

The following donations were received:—

FOR THE LIBRARY.

Proceedings of the Committee of Agriculture and Commerce of the Royal Asiatic Society, from April, 1837, to November, 1838. London, 1837-38.—*From the Society.*

The Journal of the Royal Geographical Society of London. Vol. IX. Parts first and second. London, 1839.—*From the Society.*

Experimental Researches in Electricity. Eleventh, Twelfth, Thirteenth and Fourteenth series. By Michael Farady, Esq., D.C.L. London, 1838.—*From the Author.*

The History of the Navy of the United States of America. By J. Fenimore Cooper. Two Vols. Philadelphia, 1839.—*From the Author.*

A Memoir of the Life and Character of Philip Syng Physick, M.D. By J. Randolph, M. D. Philadelphia, 1839.—*From the Author.*

Experimental and Theoretical Researches in Electricity. First Memoir. By William Sturgeon, Esq. London, 1839.—*From the Author.*

Facts and Inquiries respecting the source of Epidemic. By T. Forster, M. B. London, 1832.—*From the Author.*

Observations on the Brumal Retreat of the Swallow. By Thomas Forster. London, 1817.—*From the Author.*

Third Annual Report on the Geological Survey of the State of Pennsylvania. By Henry D. Rogers, State Geologist. Harrisburg, 1839.—*From the Author.*

A Catalogue of the Shells arranged according to the Lamarckian System, together with descriptions of new or rare species, contained in the collection of John C. Jay, M.D. New York, 1839. *From the Author.*

Mécanique Céleste. By the Marquis de la Place. Translated, with a Commentary, by Nathaniel Bowditch, LL. D. Vol. IV. With a Memoir of the Translator, by his son, N. Ingersoll Bowditch. Boston, 1839.—*From the Children of the Translator.*

Report on the Variations of the Magnetic Intensity observed at different points on the Earth's Surface. By Major Edward Sabine, R.A. London, 1838.—*From the Author.*

Dr. Hare made the following verbal communication relative to the blasting of rocks, by the aid of galvanic ignition in firing the charge.

The Doctor called the attention of the Society to the fact, that he had, so long ago as the summer of 1831, demonstrated the safety, certainty, and facility, which would arise in rock-blasting, whether

under water or otherwise, from a resort to galvanic apparatus as the means of igniting the gunpowder employed. His efforts had been incited originally by those of a person named Shaw, who had procured a patent for employing mechanical electricity for the purpose; but who, finding that method of operating too precarious to be useful, had applied to Dr. Hare to acquire a knowledge of more effectual means. This led to the experiments of which the result has been published, both in the newspapers, and in the Journal of the Franklin Institute. The subject was now referred to, in consequence of the recent publication of analogous experiments by his friend, Professor Daniell, of King's College, London, who, in the case in point, no doubt as in that in which he had "*reinvented*" Dr. Hare's concentric blow pipe, was ignorant of the results previously obtained in this country. Professor Daniell had, in blasting, used the highly ingenious apparatus known as "*Daniell's sustaining battery*," the contrivance of which had done him great honour; but Dr. Hare conceived that however preferable might be a battery of that kind, in processes requiring a permanent current; for a transient energetic ignition, such, as is most suitable for blasting, the calorimotors which he had contrived, would be decidedly more efficacious.

Dr. Hare further communicated the results of his recent experiments to obtain calcium, as follows:—

By igniting an equivalent weight of lime with an equivalent and a half of crystallized bicyanide of mercury, in two successive experiments, residual masses were obtained, which, within a small fraction, had the weight which would have resulted from the union of an equivalent of calcium, with an equivalent of cyanogen. A portion of the compound thus made, was placed between electrodes of charcoal, the lower piece being excavated slightly to receive it, and the upper one being so shaped as to enter the cavity. The electrodes were severally supported by copper rods passing through stuffing boxes, so as to be included within a glass receiver, ground to fit air tight upon an extra air-pump plate. In consequence of this arrangement, the receiver could be exhausted of air, and the electrodes consequently situated in vacuo, or in an atmosphere of hydrogen, as might be deemed preferable. The lower electrode formed the cathode, the upper the anode, of two hundred pairs, each comprising one hundred square inches of zinc surface. Under these circumstances, when the circuit was completed, by throwing the usual charge of acid upon the plates, the most intense

ignition ensued. The supposed compound of cyanogen appears to be an excellent conductor, and nothing could exceed the splendour of the purple light emitted during its deflagration. It was too vivid, however, for more than a transient endurance by an eye unprotected by deep coloured glasses. After the compound was adjudged to be sufficiently deflagrated, and time had been allowed for refrigeration, on lifting the receiver, masses were found upon the coal, which had a metallic appearance, and which, when moistened, produced an effluvium, of which the smell was like that which had been observed to be generated under like circumstances, by the siliciuret of potassium.

Similar results had been attained by the deflagration, in a like manner, of a compound procured by passing cyanogen over quicklime, enclosed in a porcelain tube heated to incandescence.

Phosphuret of calcium, when carefully prepared, and subsequently well heated, was found to be an excellent conductor of the voltaic current, evolved from the apparatus abovementioned. Hence it was thought expedient to expose it in the circuit of the deflagrator, both in an atmosphere of hydrogen, and in vacuo. The volatilization of phosphorus was so copious as to coat throughout the inner surface of the glass receiver, with an opake film, in colour resembling that of the oxide of phosphorus, generated by exposing this substance under hot water, to a current of oxygen.

The phosphuret at first contracted in bulk, and finally was for the most part volatilized. On the surface of the charcoal adjoining the cavity in which the phosphuret had been deflagrated, there was a light pulverulent matter, which, thrown into water, effervesced, and when rubbed upon a porcelain tile, appeared to contain metallic spangles, which were oxidized by the consequent exposure to atmospheric oxygen.

In one of Dr. Hare's experiments with the apparatus described, portions of the carbon forming the anode appeared to have undergone complete fusion, and to have dropped in globules upon the cathode.

When rubbed, these globules had the colour and lustre of plumbago, and by friction on paper, left traces resembling those produced by that substance. They were insusceptible of reaction with chlorohydric or nitric acid, or with aqua regia. They were not, in the slightest degree, magnetic.

About 1822, Professor Silliman had obtained globules which were by him considered as fused carbon, by others were deemed to be de-

positions of carbon carried from one electrode to the other. Professor Silliman had at that time sent Dr. Hare several nodules for examination, of which none, agreeably to his recollection, appeared so much like products of fusion as those lately obtained.

Formerly, plumbago had been considered as a carburet of iron, but latterly, agreeably to the high authority of Berzelius, should be viewed as carbon holding iron in a state of mixture, and not in that of chemical combination. It would not then be surprising, if the globules in question furnished an instance of the conversion of charcoal into plumbago.

Since the abovementioned experiments were made, Dr. Hare has had reason to believe that the compound obtained as above described, by heating lime with bicyanide of mercury, contains fulminic acid, or an analogous substance. The compound being dissolved in acetic acid, and the filtered solution subjected to nitrate of mercury, a copious white precipitate resulted. This being desiccated, proves to be a fulminating powder. It explodes between a hammer and anvil like fulminating mercury, or rather with the sharp sound of fulminating silver.

Dr. Hays made a verbal communication of a case of the application of the catoptric method of examining the eye, by which he had detected the destruction of the lens and of its capsule, under circumstances which would not otherwise have led to the conclusion that they had been destroyed, and where vision had been obtained by the use of a cataract lens.

Stated Meeting, June 21.

Present, twenty-four members.

Mr. Du Ponceau, President, in the Chair.

The following donations were received:—

FOR THE LIBRARY.

Proceedings of the Royal Astronomical Society. Vol. IV. Nos. 1 to 21, and No. 23. London, 1839.—*From the Society.*